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RESEARCH ABSTRACTS

Acetic Acid Recovery in the Cellulose Acetate Industry - H. R. S. Clotworthy. Industrial Chemist, March 1931.

An illustrated article dealing with methods of acid recovery first by the conversion into acetates.

Glacial acetic acid by distillation with strong sulphuric acid, preferably in the presence of an additional amount of glacial acetic acid to act as a diluent or -

Conversion of acetic anhydride by the action of sulphur chloride in the presence of additional quantity of acetic anhydride as a diluent. The disadvantages claimed are

(a) Various chemicals consumed in the process:- Sodium carbonate, sulphur chloride, sulphuric acid;

(b) The losses are relatively high with a consequent low yield of glacial acetic acid or anhydride;

(c) The whole of the water contained in the dilute acid solution has to be evaporated (this has been obliviated in more recent processes, e.g., that of Les Distilleries des Dux-Sèvres); and

(d) High cost.

Recovery may be made by means of an extracting solvent (a. employing a solvent of lower boiling point than the acetic acid, the solvent being subsequently distilled off, leaving the acetic acid as residue; and those employing a solvent of higher boiling point than acetic acid, the acetic acid being subsequently distilled off, leaving the solvent as a residue). References are made throughout the article to a number of British patents and to the French process. It is stated that in a cellulose acetate factory equipped with proper recovery plant, it is only necessary to replace sufficient acetic acid or anhydride to balance that which combines with the cellulose together with what is lost in the recovery plant since the bulk of the acetic acid remains in the cycle of operations. - (S)

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Densometer With New Timing Devices. - W. E. L. E. Gurley. Instruments, Vol. III - 10. (October 1930).

A description of an improved densometer for use with paper or fabric, having built into it an automatic timing device dependent for its action upon a photo-electric cell which is exposed to light during the progress of the test. While the cell is exposed, a relay is closed, and the current operates an electric Telechron clock. When the light is shut off the circuit is broken and the clock stops, thus indicating the number of seconds required for the passage of a known amount of air (which may be varied by suitable adjustment). The whole instrument may be connected directly to the lighting circuit and the necessary low voltage for the lamps is furnished by a small transformer located in the case carrying the amplifying system, relay and clock. A vane attached to the inner cylinder of the Densometer passes by a slot between the source of light and the photoelectric cell and has an aperture cut in it corresponding to the distance between rings on the cylinder so as to control the length of exposure. Three vanes designed for 100, 200 or 300 cc are included and the vanes for testing 50 or 400 cc are available as optional equipment. - (S)

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The Utilization of X-rays in the Examination of Textiles. - R. Truesdale and C. Hayes.
Journal of the Textile Institute, Vol. XII - 11 (1921).

The article outlined the use of X-ray apparatus for obtaining photographs of textile yarns and fabrics to display conditions as they exist in rubberized or coated products. This use of X-rays is, of course, distinct from that which is employed for the determination of fibre structure and is comparable with its industrial use for the study of flows in castings, etc. The material to be studied must be impregnated with two solutions resulting in the precipitation of lead chromate on the fibres. Solution "a" is composed of 30 grms. of yellow litharge, 14 cc. glacial acetic acid, 5 grms. glue, one cc. glycerol and water to make 60 cc. Solution "b" is composed of 10 grms. of potassium bi-chromate - 40 cc. of water. The yarn is first soaked in solution "a", then solution "b" (hot) is added. The yarn is then wrung out and dried slowly at 100°-110°F. Ten radiographs are reproduced showing the results of analysis of tire structure. (Abstractor's note: while this work was reported in 1921 there has apparently been little done with the method since, and this field of analysis is deemed of sufficient importance to be reviewed here.) - (S)

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Thermal Transmission of Fabrics. - E. Freedman.
American Society for Testing Materials, Preprint No. 106, June 1930.

A description of assembly of apparatus for the measurement of heat transmission through porous materials such as cotton and woolen fabrics. Tests are conducted using a calorimeter containing an electric heater surrounded by the material under test, where velocities up to twenty-five miles an hour and temperatures down to 20°F are employed; the latter by special refrigeration equipment. The electrical input to the heater is measured when specially constructed Xylol thermometers showed a constant reading. The specimens used had an area of aproximately 100 square inches. The method of test is stated to be sensitive and the results reproducible. - (S)

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Flax Wax and Its Extraction. - W. H. Gibson.
The Industrial Chemist, March 1931.
(Paper delivered at the Annual Meeting of the Institute of Chemical Engineers).

Flax fibre contains some 1 to 2 per cent of flax wax which, from analytical data given, indicates that it corresponds closest to beeswax, from which it is distinguished by a slightly lower saponification value, a higher iodine value a higher melting point and by being harder and more brittle, but not as brittle as carnauba wax. It would prove a valuable constituent of polishing preparations. When the fibre is combed and drawn, a fine dust, termed "pouce", together with short fibre flax, is separated, and since this contains about 10 per cent of wax, it is from this "pouce" that flax wax might be obtained in commercial quantities. Dealing with this dust and short fibre material on a large scale in a solvent extraction plant, however, is very difficult, owing to its low density and troubles in the solvent extraction. A promising method appears to have been found by compressing the material into blocks when transport difficulties are diminished and extraction by solvent proceeds more rapidly. It was suggested by the author that the residue, which contained about 1.4 per cent of nitrogen, may prove useful as a fertilizer. - (S)

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X-Ray Interpretation of the Structure and Elastic Properties of Hair Keratin. - W. T. Astbury and H. K. Woods.
Nature, Vol. 126 (1930), Page 913.

It is pointed out that different X-ray fabric diagrams may be obtained dependent upon whether the animal hair is stretched or unstretched. The difference is stated to correspond to a reverse transformation between alpha- and beta-keratin. It is suggested that the structure of the keratin complex may consist of a peptide chain ordered into a series, the precise nature of the side linkage being as yet undetermined. It is pointed out that a structure of this type might explain why the main periodicity in unstrained hair is comparable with that of cellulose, chitin, etc. It might also explain why natural silk does not exhibit as large a range of elasticity as the hair and also why the latter is lubricated by the action of water and steam and why keratin resists solvents and enzymes. - (S)

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Twist in Hosiery Yarns.
The Melliand Textile Monthly, Vol. II, No. 10.

(A study of the relative strengths and other qualities of tram, grenadine and various other hosiery-silk yarn twists - through the courtesy of R. K. Laros Silk Company and Bethlehem Textiles Company).

Many photo-micrographs and charts are used to indicate the relations between shortening, breaking strength, appearance and bursting strength of hosiery with the twist employed in the yarn. It is noted that silk hosiery becomes duller as the yarn twist is increased or becomes more complex, reaching a practical limit at about 20 turns. Strength is slightly increased with twist up to approximately 16 turns per inch, beyond this point the fabric and the yarn lose strength and elasticity with further twisting. The yarn shortens as the twist increases. Grenadine is a reverse twist yarn and requires higher grades of silk evenness and cleanliness (as do other high twists) due to the tendency of the high twist spinning to emphasize defects. It is also stated that at 20 turns regular tram spinning, there is, for all practical purposes, no creeping or twisting in the fabric; the delustre effect is approximately equal to the grenadine twist and the fabric is stronger and more elastic. - (S)

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Industrial Humidity Instruments. - M. F. Béhar
Handbook of Industrial Instruments (as published initially in Instruments, Vol. III - 9, 10 & 11 (1930)).

This is Chapter IX of the proposed book and is concerned with the general data for summarized laws regarding water, water vapor and the atmosphere; the importance of atmospheric humidity with regard to materials - particularly textiles; the importance with regard to comfort and health; the measurement of humidity; indicating instruments; recording instruments; the automatic control of humidity. Numerous tables and charts taken from various government and other publications are included, together with a detailed discussion of their use. Fourteen examples worked out in chart form and accompanied by descriptive material are included. Illustrations of various types of wet and dry bulb psychrometers and hygrometers are included with a discussion of their relative merits. They are classed as Psychrometric, Hygroscopic, Thermal Conductivity, Condensation, Dewpoint, Evaporimetric and Chemical. Recording instruments are illustrated and described as physchrometric and hygroscopic single-pen types, absolute humidity recorders (thermal conductivity); and two-pen instruments recording dry and wet bulb temperatures separately. A very good

discussion of the construction and operation of a wide range of automatic control systems concludes the article. - (S)

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The "Promi" Microscope Drawing and Projection Apparatus. (Clay Adams Company, Inc.) Instruments - Vol. III-12 (1930).

This is a description of a compect apparatus intended primarily for projection of specimens, textile fibres, etc. and sketching or demonstration. It swings from vertical to horizontal position on a swivel rod and includes a high-powered light of low voltage. It is capable of enlargements up to 1300 times at a distance of six feet. A polarizer and analyzer may be supplied if desired. - (S)

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Determination of Water-proofness of "Porous" Water-proof Fabrics.- G. Barr. Second Report of the Fabrics Coordination Research Committee 1930, Issued by the Department of Scientific and Industrial Research, Great Britain (Detailed abstract to be found in Journal of the Society of Dyers and Colourists, September 1930, Page 327).

The "bag", "spray" and "pressure" tests are compared and the difficulties inherent to each method are pointed out. An apparatus and technique have been developed whereby the pressure head acting against the fabric is increased at a constant rate. The pressure required to cause the first appearance of drops on the other side of the fabric is measured. It is stated that no relation appears to exist between the temperature of the water and the readings obtained. The relative efficiencies of various proofing processes, apart from their influences on the durability of the fabric, may be judged by combining the above test with a test of the porosity to air. The original article included a description of the apparatus and method for this latter test. - (S)

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Silk Fibroin. - S. Goldschmidt & K. Strauss (Abstracted from Annalen)-Vol. 480 (1930), Page 263.
Journal of Society of Dyers and Colourists, September 1930.

X-ray and hydrolytic investigations of silk fibroin have shown it to be composed of at least two substances decomposing at different rates. It was attempted to decompose the fibroin into the substances and the course of the decomposition was observed in the polarizing microscope. One of the substances gives an X-ray diffraction diagram. The other appears to be of very high molecular weight, possibly of molecular formula $(C_{11}H_{18}O_4N_4)_x$. It is pointed out that the original silk fibre is rounded, but that the degraded silk, as a result of the removal of one of the component substances, has a flat and broad appearance with a triangular cross-section. (Abstractor's note: It may be of interest to observe that some natural silks possess this triangular cross-section originally.) - (S)

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The Spierer Lens - W. Seifriz.
Journal of Physical Chemistry, Vol. 35 (1931), Page 118.

A small platinum mirror is inserted in the lens system of an oil immersion objective and enables colloidal substances to be viewed against a dark field. All

direct light is reflected by the mirror and since it is smaller than the lens aperture, space is left for the entrance of the diffused rays from the object. The author states that a special cardioid condenser may be used to advantage with this lens when examining colloids. As a result of the examination of the cellulose walls of plant cells by means of this lens, evidence in support of both the micellar and striated structures of cellulose is adduced. It is stated also that the lens reveals a remarkable similarity between the cellulose in living plant cells and protoplasm. Particles of cellulose of linear dimensions not exceeding 0.5 micron can be resolved and are described as supermicells. - (S)

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Setting of Square-Built Twills, (Theory and Practice of Cloth Setting). - S. Brierley.
Textile Manufacturer, Vol. LVII, No. 674, (February 1931).

Ashenhurst's assumptions as to cloth setting for these constructions are shown not to hold for a wide range of weaves, and a series of empirical formulas are developed which much more closely indicate the conditions in a series of worsted fabrics. These represent certain improvements over previous work by Armitage and Law. Four tables and three graphs are used to discuss the data which may be summarized as follows:

a. The standard cloth for comparative purposes is one woven to a maximum sett under ordinary weaving conditions, with equal ends and picks per inch, and of the same counts of yarn for warp and filling. (Such a cloth might be a 2/2 twill, 2/24s Botany worsted warp and filling, with 52 ends and picks per inch.)

b. The maximum loom settings for all twill weaves with a movement of one is given by - $11.57 \sqrt{\text{Worsted counts}} \times F^{0.39}$ * or $\sqrt{134 \times \text{worsted counts}} \times F^{0.39}$.

c. Cloths made with woolen yarns will take the same settings as with equivalent counts of worsted yarns in the same weave, provided the woolen yarns are strong enough (this setting would be somewhat closer than normal practice). The maximum settings of woolen cloths are $\sqrt{61 \times \text{skein counts}} \times F^{0.39}$.

d. For cotton cloths woven under the same conditions, maximum threads per inch are $\sqrt{200 \times \text{cotton counts}} \times F^{0.39}$.

e. In all cases, the basic formula $\sqrt{K \times \text{counts}}$ gives the maximum setting for the plain weave.

** f. Threads per inch = $\sqrt{K \times \text{counts}} \times$ (weave value).

g. The weave values are as follows:

Average Float (F)	1.0	1.5	2.0	2.5	3.0	3.5	
Weave Value	1	1.17	1.13	1.43	1.54	1.63	
Average Float (F)	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Weave Value	1.72	1.87	2.0	2.14	2.25	2.35	2.45

*F = Number of yarns under float.

** = Threads per inch in this case mean an average of ends and picks. - (S)

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Solution in Concentrated Sulphuric Acid as a Means of Determining The Structure of Vegetable Fibres. - A. P. Sakostschikoff (Melliand's Textilberichte). Vol. XI, Page 44 (1930). As abstracted in the Society of Dyers and Colourists, September 1930.

The fibre under investigation is placed on the object glass and treated with a drop of 166° Tw. sulphuric acid. The fibre begins to dissolve immediately, and

dissolution proceeds so rapidly that it is impossible to follow the intermediate stages. When a few drops of glycerine are added, however, solution of the fibre ceases, and the process can be examined. The excess sulphuric acid-glycerine mixture is removed by means of a strip of filter paper, or by suction through a capillary tube, without damaging the fibre. When covered with a watch glass the preparation can be kept for a long time and can be examined photographically. Linen fibres were first investigated, and the excellent photomicrographs obtained indicate that the fibre wall contains morphologically detached transverse plates, which are actually the elements of the structure of the bast fibre. Other bast fibres, e.g. jute, ramie, etc., also exhibit similar transverse plates in the fibre wall. It is advantageous, after adding the glycerine, to treat with zinc chloride-iodine, when the dark blackish-blue colour of the amyloid renders those portions of the cellulose, which are only swollen and not dissolved, more easily discernible. Too strong a colour, however, destroys the transparency, but this disadvantage is counteracted by adding a few drops of lactic acid. Similar investigation of cotton fibres shows the presence of transverse plates in the fibre wall. Finally, the reaction indicates that the different cracks, creases, etc., in the wall of the cotton fibre are comparable with the displacement of bast fibres, and that their presence can be regarded as characteristic in the diagnosis of the injury to cotton fibres. - (S)

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Apparatus for the Measurement of Flow and Relationship of Textile Filaments. - H. De W. Smith.
Journal for Textile Institute, Vol. XXII - 3, 1931, Page T158.

An article in two parts, the first of which describes an improved model of the Polanyi tester, together with an apparatus for the measurement of the decrease in load in filaments held at constant small extensions. The variable quantities involved and the precision of the devices are discussed. The second part deals with the study of filaments of viscose rayon which had been pretreated by swelling in water, followed by drying in air at a very small tension in order to remove kinks and to equalize internal stresses. It is stated that the course of the relationship curve is approximately the same at various loads; or, in other words, that the relation rate of relaxation is independent of the load and of the cross-section. Boltzmann's theory of after-effect is discussed, and it is pointed out that, perhaps because of an alteration in the inner structure due to flow, the curves for this quantity deviate from the theory. The relative rate of flow is decidedly dependent upon the load.

To summarize the after-effect behavior of rayon up to the point where alteration of the inner-structure occurs may be explained by the Boltzmann theory. Increase in temperature is shown to increase the rate of flow with great rapidity and the flow is from 30 to 50 times greater for the wet material than for the dry.

(Abstractor's note: Boltzmann's theory is an attempt to consider the effect of deformations which have occured previous to the current test, and the formula which he develops includes the integral of a function representing the "Recollective capacity" of the body). For the individual experiments given, the Boltzmann theory provides a conversion of the flow and relaxation curves into one another. The influences of temperature and of degree of swelling on the flow is such that the general form of the curve representing the test data remains the same; only the rate of change is altered. Eighteen references to the literature are given, seven of which are previous papers from the Journal of the Textile Institute. - (S)

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The Newer Developments in Textile Microscopy. - E. R. Schwarz
The Melliand Textile Monthly - Vol. II - No. 10, (1931).

A discussion of the developments in fundamental, applied and pure scientific research in textile microscopy covering changes in equipment, new technique, handling of data and the applications of the results of researches. The use of direct color photomicrography and of polarized light, as well as stereoscopic microscopy are pointed out. - (S)

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The Interpretation of Quantitative Experimental Results in Textile Research.
Journal of the Textile Institute - Vol. XII (1921).

I: The Probable Error of the Mean as a Criterion of Accuracy in the Testing of Yarns. - E. A. Fisher (June 1921).

Deductions made from the results of yarn testing are too frequently of doubtful value. Thus, methods of sampling and the interpretation statistically of the results of tests is of considerable importance. The writer has made an attempt to obtain information by making a large number of determinations of the breaking weight and elongation of yarns and analyzing the results systematically. - (S)

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The Selection of a Wet Finishing Soap. - Textile Research Department, Proctor & Gamble, Cincinnati, Ohio.
Part I of Bulletin IV, Wool Series - (Fulling and Cloth Scouring).

A discussion of soap in its relation to wet finishing of woolen and worsted fabrics. After an introduction discussing the importance of an intelligent selection of a soap, the Bulletin continues with an exposition of soap manufacture, fats and oils with their relation to soap and the source vs. nature and purity of the soap stock.

The properties desirable in a Finishing Soap are listed:

Convenience in handling (quick solubility):- flaked soap is stated to be easier to handle and weigh than a solid soap; a low titer soap dissolves more rapidly than one of high titer; and a low titer soap in flaked form offers the maximum saving in time, steam and labor.

The body of a fulling soap:- Heavy body is not necessary for good fulling and may be a handicap. The liquid condition of the oleate soap gives good fulling results and has quicker penetration and more even distribution, which results in a faster start of the fulling and reduced danger of uneven felting or shrinkage.

Type of suds:- The suds are valuable as an indicator of good scouring conditions but not for the actual work of scouring.

Rapid and thorough rinsibility:- The greater solubility of solium oleate results in a more rapid rinsing, lower rinsing cost and greater protection against odor developments.

Resistance to rancidity:- A well made soap of low titer will resist rancidity practically as well as one of high titer. - (S)

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The Diameter of Yarns, (Theory and Practice of Cloth Setting). - S. Brierley.
Textile Manufacturer, Vol. LVII, No. 673, (January 1931).

A preliminary discussion of the computation of yarn diameter preparatory to further papers on the setting of cloth. The author makes frequent references to

work by Ashenhurst, but points out the fact that these may well be considered "a convenient fiction". It would seem quite evident that either the pamphlet entitled "On The Diameter of Yarns" by Sam Wakefield has been neglected or has not been read, since the formulas given still carry the factor "Yards per pound" beneath the radical. It is worthy of note, however, that in the concluding paragraphs, Mr. Brierley states that "when means have been devised for measuring the diameter of a yarn and its density, from which the actual counts can be calculated with a reasonable degree of accuracy, then it can be said that the actual diameter of the yarn is known, but in addition to the amount of regain or condition, the question of tension is of primary importance." A good reason for omitting the examination of yarns for these properties by means of the microscope is significantly absent from the discussion, and work now under way in the United States promises to throw considerable light upon micro-analysis in the near future. With the continued appearance of articles of this type, the futility of mathematical and empirical analyses becomes increasingly evident. Reasonable procedure would seem to be an examination of the actual conditions as shown by the microscope, taking advantage of the newer developments in technique. - (S)

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The Testing of Yarns. - J. W. Pennington.
Textile Manufacturer, Vol. LVII, No. 674, (February 1931).

A short article, evidently an abstract of a lecture which points out the fact that much of the equipment in manufacturing establishments is inadequately and inefficiently arranged for yarn testing; that, in many cases, sampling is poorly carried out and is inadequate to produce the desired results; and frequently the factors of machine efficiency, temperature and humidity, speed of test, and length of sample are minimized or neglected. The article continues with a discussion of the single strand test, mentioning particularly the influence of length of specimen, and the skein method of testing is mentioned in comparison, statement being made to the effect that yarn strength by this method will show only approximately 60 per cent of the single strand value.

(Abstractor's note: This has been supported by investigations in this country.)

No mention is made of the serigraph test for yarn nor the fact that the values thus obtained approach very much more closely the average single strand value. Mention is made of the impact test, methods of determining counts, twist, moisture regain, and of the importance of elongation determinations by means of autographic records. Further paragraphs are concerned with a very brief discussion of the deviations of data, the use of standard deviation and of the sub-mean. The writer can not quite agree with the last paragraph in which it is stated that the strength-elongation curve is at first a straight line showing an elastic condition, and that later a point is reached beyond which the elongation is greater in proportion to the load. This is referred to as a yield point. It is probable that the statement is not intended to be rigorous since not all diagrams exhibit these characteristics. - (S)

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"Abrasion Tester." - H. Z. Schniewind.
Instruments, Vol. III-9, (1930).

Sample of fabric to be tested is fastened to a metal plate and subjected to intermittent abrasion in different directions and on different spots. Thus, the fibre at any place is free to rise again from time to time. The abrading motion is a combination of rotation and rolling and the abradant is a plate under adjustable pressure. The whole is motor driven and a counter enables the operator to read the number of cycles to which the sample has been subjected. The abrasion is measured by determining either the loss of weight or the increase of permeability to air. - (S)

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"Physical Properties of Artificial Silk and Their Relation to the Raw Materials and the Methods of Preparing". - Viviani.
(Abstracted by the Journal of Society of Dyers and Colourists from Giorn. Chim. Ind. Appl. Vol. 12 (1930) Page 519.)

Among the problems discussed are the real and apparent specific gravities and covering power of the fibre; ductile resistance, elongation, and elasticity; the graphical relation between tenacity and elongation; a detailed study of the influences of the various manufacturing stages on the characteristics of the fibre; methods for controlling its uniformity. Methods are described for determining the viscosity of cellulose and of cotton; maturing alkali in cellulose in the absence and presence of oxygen; and measuring the absorption of oxygen during the latter process. - (S)

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"Swelling Cellophane and Artificial Silk Cloth by Caustic Soda". - K. Tanemura and S. Miyoshi.
Journal of the Society of Chemical Industry (Japan) Vol. 33 - (1930), Page 431.

Maximum swelling of cellulose occurs in a 10% solution of caustic soda and in artificial silk cloth with 8% to 13% solutions. Addition of certain chemical diminishes the swelling action up to a certain point beyond which a further addition of solvent has no effect. Tabulated data is given. - (S)

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"Sorption of Water by Cellulose". - S. E. Sheppard & P. T. Newsome.
Journal of Physical Chemistry, Vol. 34 (1930), Page 1158.

A study of the sorption of water by cellulose which is stated to take place in two principle stages. In one, molecules of water become attached to those hydroxyl groups of the cellulose molecules which do not mutually satisfy each other. Since cellulose does not take up much more than half the amount of water which might be well accounted for on this basis, it is evident that a considerable and variable portion of water is held in pores or capillary spaces. It is pointed out that there is a certain inter-relation between these processes. - (S)

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"Physical and Chemical Nature of Cellulose Nitrate". - Beck, Clémont and Rivière.

It is concluded from a study of three distinct cases of precipitated cellulose nitrate that the material is chemically homogeneous but physically heterogenous. - (S)

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"Action of Sunlight and Oxygen on the Strength of Cotton Sheeting".- E. W. Brugmann, L. B. Turner, and J. B. Phillips.
Paper before division of cellulose chemistry of American Chemical Society, Indianapolis meeting. March 20-April 5.

Purified cotton in the form of sheeting (99.5% alpha cellulose) was exposed under glass filters to sunlight for two months in dry and moist oxygen and nitrogen. Changes in tensile strength, copper number, soda, solubility, and cuprammonium viscosity were determined. Slight deterioration (10% loss in tensile strength) occured in samples exposed in nitrogen, and marked deterioration (40% loss in tensile strength) occurred in samples exposed in oxygen. Moisture and the short wave lengths of sunlight increased the deterioration. When the cotton sheeting was exposed in the dark to dry oxygen and nitrogen at 60° C. for two months and the above properties measured, only slight deterioration occurred in both cases and it was probably due to the heat alone. It is concluded that light is the primary factor in deterioration of cellulose by sunlight and air, and that oxygen acting in the presence of light greatly accelerates the deterioration.

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"Fastness of Dyes to Perspiration". - C. C. N. Vass.
Journal of the Society of Dyers and Colourists, Vol. 45 (1929), Page 217; Vol. 46 (1930), Page 190 and Vol. 47 (1931), Pages 9 & 10.

The sub-committee on Fastness to Perspiration of the Fastness Committee of the Society of Dyers and Colourists report a series of studies on samples of perspiration. In every case the reducing power of fresh normal female perspiration was greater than that of male, and the changes observed on standing were shown to be due to the action of bacteria normally present on the skin. The resulting data concerning the reactions and composition of perspiration are now in use to formulate perspiration-test solutions. - (S)

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"Baro-Thermo" - Hygrograph
Industrial Chemist, March 1931.

An instrument for recording on one chart with three separate traces (each a different colored ink) barometric pressure, temperature and humidity. The clock-driven chart records once per day or once per week, as required. An exhausted diaphragm barometer movement operates through a link-and-lever mechanism so designed as to be practically free from hysteresis and temperature errors. The hygrograph movement consists of a bundle of about twelve strands of treated hair and the scale for this part of the instrument is non-uniform. - (S)

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"Optical Instruments in the Textile Industry." - Bausch & Lomb Optical Co., Rochester, N. Y. 97 Pgs.

Descriptions and illustrations of optical instruments from the extensive Bausch & Lomb line that are particularly adapted for textile use. It is much more

than a catalog, as the textile uses for each instrument are accurately and clearly described. In addition to being well indexed the catalog contains a bibliography of recent articles on textile microscopy, and also on various textile phases of hydrogen-iron determinations.

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"Automatic Control with Photoelectric Cells"- E. H. Vedder.
Electrical Journal, June 1930.

An illustrated article descriptive of a number of applications of the photo-electric cell to automatic control problems. Care has been taken to select cases which are representative of the range of problems encountered, and this article should form a valuable reference for anyone interested in the application of such equipment to textile research. - (S)

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"Contributions to the Chemistry of the Plant Cell Wall". - W. M. Harlow.
Industrial and Engineering Chemistry, Vol. XXIII - 4. (1931).

Microscopy of acid-treated sawdust as an index to some of the differences in the physical properties of hard-wood and soft wood lignin. - (S)

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German Patents on Production of Synthetic Silk from Fibroin Base.-
Consular report to U. S. Dept. of Commerce from Consul General W. L. Lowrie, Frankfort-on-Main, Germany.

Two recent German patents for the production of synthetic silk from fibroin are described. That of Von Weimarn consists of treatment of natural silk waste with solutions of natural salts, such as sodium iodide. The resultant fibres are said to be too stiff to be of practical value. Another process by E. Rossner, and assigned to the I. G. Farbenindustrie, employs phosphoric acid as a solvent for fibroin. The solution is said to be highly viscous, and to produce long uniform fibres of silky appearance when stretched and wound on bobbins. Tensile strength of the yarn is said to be 1.5 kilograms per denier, and the elastic limit 12 to 15%.

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Apparatus for Measuring Thermal Transmission of Textiles.- Dr. Herbert F. Schiefer, Associate Physicist, Textile Section.
Bureau of Standards.
Paper read by Dr. Schiefer at meeting of Committee D-13 of American Society for Testing Materials, New York City, March 12.

An apparatus for measuring thermal tramsission of textiles was designed by the test section of the Bureau of Standards to fill the need for a less elaborate apparatus than that described in Technologic Papers Nos. 266 and 269. The advantage of the new apparatus over the old are that it is simpler to construct and to operate requires a smaller sample for test (a piece 8 inches in diameter); gives results more rapidly (approximately 1/2 hour required for test); and is compact and portable. The values obtained with it for relative thermal transmission are in good agreement with those obtained with previous equipment and by different methods in other laboratories.

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"The Ultra Violet Microscope". - Francis F. Lucas.
Bell Laboratories Record. August 1930.

The additions to the mechanical system of a standard Ultra Microscope together with a special technique for obtaining optical sections at 3600 diameters, or higher, are described. While much of the work is directly applicable to the study of living cells, the technique involved is of interest in its possible application for fundamental research in fibre structure, particularly for rayons. - (S)

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"The Effect of Swelling Agents and Stretch on the Creasing Properties of Viscose Silk". - A. J. Hall.
Journal of the Society of Dyers and Colourists, Vol. 46, Page 257 & 293.

Stretching was shown to decrease the softness and the resistance to creasing of a rayon yarn. In the treatment of rayon materials processes which produce swelling are frequently used and it is shown that swelling (which results in an increased affinity for direct dyes) decreases slightly the elasticity and resistance to creasing of a viscose rayon except when swelling is produced by means of phosphoric acid. - (S)

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Constructive Criticism Welcomed.

Constructive criticism of T. R. I. BULLETIN, that may improve the service it is designed to provide, will be appreciated by the Committee on Research Abstracts and Bibliography and by the Secretary.

Please address the Secretary in this connection.

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Copies of Matter Abstracted.

A total of 75 domestic and foreign publications and now being regularly read for T. R. I. BULLETIN by the Committee on Research Abstracts and Bibliography. The list is now quite complete excepting for chemical subjects, and arrangements for the handling of the latter are under consideration.

The Secretary will endeavor to provide members with mimeograph or photostat copies at cost of articles and other matter abstracted that they cannot obtain otherwise. Most of the publications, however, may be consulted at leading public or other libraries, and most of the books, pamphlets and periodicals may be obtained from their respective publishers.

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